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EFFECT OF CCC ON IMPROVEMENT OF FLOWERING AND YIELD PRODUCTION OF SOME OLIVE CULTIVARS

By

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ABSTRACT: The study is preformed in the two seasons 2003/2004 and 2004/2005 to elucidate the effect of Cycocel-growth retardant foliar spray, applied just before flower induction on flowering, fruiting and yield/tree of the two olive cultivars Agazi Shami and Picual, also to increase number of flower buds, which might results in an increase the fruit yield/tree.

The results indicated that CCC sprayed at concentration 1000 or 2000 ppm on 1st November or 1st December had decreased shoot growth, number of leaves/shoot and leaf area, but increased No. of sprouting shoots per main branch in the ensuing growth season in the two cvs. compared with those of control.

CCC application in late autumn resulted in an increase in number of open flowers, number of fruit set and fruit set percentage compared with those of control. Higher CCC-concentration (2000 ppm) caused more increase in number of open flowers and number of fruit set than lower one (1000 ppm). CCC increased number and percentage of retained fruits per main branch at harvest compared with control in the two studied cultivars. All CCC-treatments increased the fruit yield compared with those of control. The increase in yield is attributed to the increase in number of open flowers, number of fruit set, consequently the increase in number of fruits per tree at harvest, On the other hand, CCC application reduced fruit weight fruit volume and pulp weight at harvest compared with those of control but had no effect on pulp percentage or fruit specific gravity. CCC application increased TSS percentage of fruit juice at harvest, TSS/acid ratio but decreased the fruit total acidity than control. It increased also fruit oil content, moisture and fruit carbohydrates percentage (dr.wt.) compared with those of control. CCC application thus improved the fruit quality as well as fruit yield compared with those of control.

INTRODUCTION

Olive, "*Olea europaea* L." is successfully cultivated in the irrigated semi arid region all over the world and is an important food substance of the Mediterranean diet. In Egypt, the olive cultivated area ranks the fourth place among the fruit crop acreage.

Recently, olive growers complained the low productivity of olive yield especially in the newly reclaimed areas such as in the north Sinai, on sides of the desert roads and in the northwestern coast. Therefore, the present work aims to improve the olive productivity through application of the growth retardant such as Cycocel (CCC) as foliar spray just before the occurrence of the flower induction process of the two olive cultivars grown in newly reclaimed areas. CCC is supposed to induce a temporary retardation for the vegetative growth, which might stimulate the flower induction process and increase number of fruitful buds (Ravishankar et al., 1993; Ogata et al., 1995 and Abdel-Fattah., 1996). Thus, the yield production might be at last increased. Two cultivars are involved, Agazi Shami and Picual. The first cultivar is an egyptish one, suitable for pickling, while Picual cv. was introduced from Spain and used for oil extraction (24% to 28% oil).

MATERIALS AND METHODS

The present study was carried out during the two successive seasons 2003/2004 and 2004/2005 on olive trees cvs. Agazi Shami and Picual. The study performed in a private orchard on the side of Ismailia desert road Km 90 from Cairo. The orchard is planted with the two olive cvs. under study as the trees 9 years old, 6x6 m apart, grown in sandy soil and irrigated through drip irrigation system. All trees received similar cultural practices. 100 trees of each cultivars, similar in vigor and healthy were chosen for investigation.

CCC was applied as foliar spray on the olive tree foliage in late autumn at concentration 1000 and 2000 ppm at two dates. 1st November and 1st December.

The two CCC application dates were determined according the gained previous results of the anatomical study performed in 2002/2003 by the same researchers of the present work. All sprayed solutions including that of control contained 0.1% of tween 20 as detergent. Each

treatment involved three replicates, with 4 trees per each replicate. Split plot design was followed according to Snedecor and Cochran (1980).

Eight new sprouting shoots per/tree were measured at growth cessation in July 2004 and 2005 for determining shoot growth. Number of leaves/ shoot were recorded. Area of the fifth distal leaf on the shoot (16 leaves per a tree) was calculated according to Ahmed and Morsy (1999): Leaf area = 0.53 (Length x Width) + 1.66 = cm^2.

Number of growing shoot per a main branch (two years old) was recorded in July of each season. Four main branches per a tree were used to determine average of shoots number/main branch.

Four main branches were tagged at flower balloon stage. Open flowers/ main branch, number of fruit set, fruit set % at blooming end and retained fruits % at harvest per main branch were recorded.

Fruit yield was harvested in Agazi Shami when the fruit colour attained grade brilliant yellowish green on 28th August. Picual cultivar was harvested at colour grade full deep purplish on 1st October in the two seasons. Yield/tree was weighed per Kg.

Samples of twenty fruits/tree (replicated 3-times) were devoted at harvest of each cultivar for determining: f. fresh weight, average volume, pulp weight, pit weight, average oil % TSS%, total acidity %, fresh moisture % and total carbohydrates%.

The extraction of the fruit oil was performed by petroleum ether according to A.O.A.C., (2000).

The results are analysed according to Snedecor and Cochran (1980) to the least significant difference at 5%.

RESULTS AND DISCUSSIONS

Vegetative growth in response to CCC applications:

Application of CCC at concentrations 1000 or 2000 ppm at late autumn (1st Nov. or 1st Dec.) significantly decreased the shoot growth as measured at harvest in the ensuing season in both Agazi Shami and Picual olive cultivars when compared with control in the two studied seasons (Fig. 1).

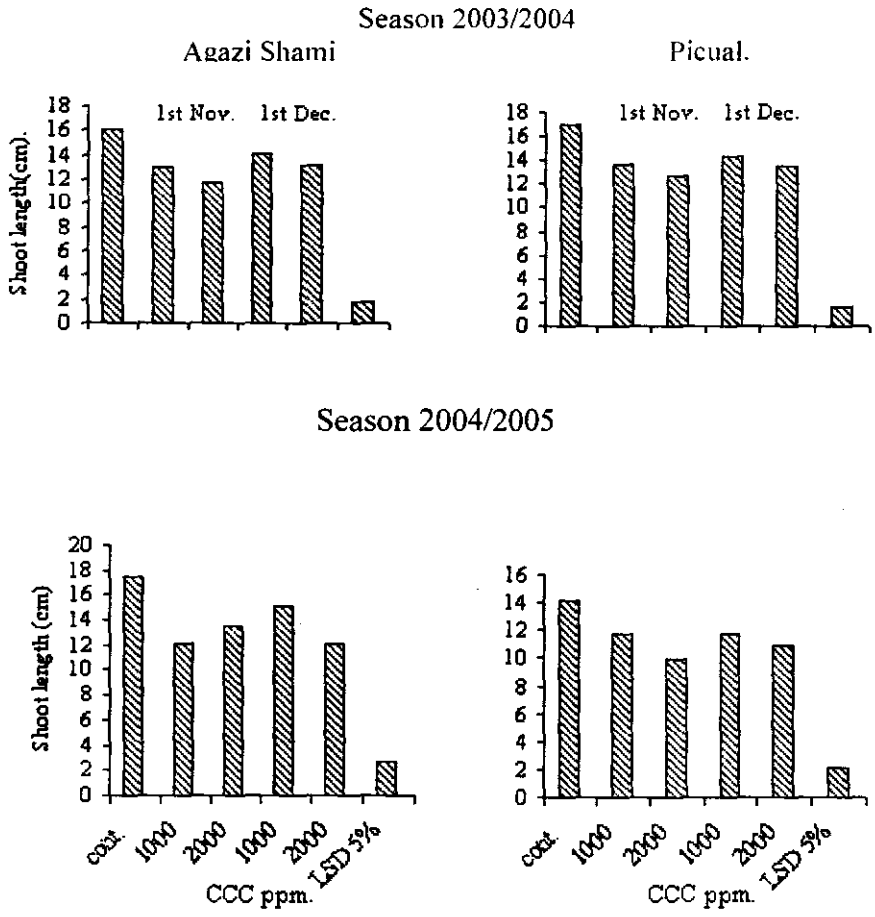

Fig. (1) Effect of CCC treatments on **shoot length** (cm) of Agazi Shami and Picual olive cvs. in 2003 /2004 and2004/2005 seasons.

Table (1): Effect of CCC on vegetative growth of olive Agazi Shami and Picual cvs. in seasons 2003/2004 and 2004/2005.

Cultivar / Character. / Date of sample	CCC ppm.	Agazi Shami		Picual	
		No. of leaves / shoot.	Leaf area (cm^2)	No. of leaves / shoot.	Leaf area (cm^2)
2003/2004					
	Cont.	17.96	4.19	22.50	4.49
1st Nov. 2003	1000	14.13	3.63	17.23	3.60
" " "	2000	12.85	3.54	15.54	3.67
1st Dec. 2003	1000	15.36	3.63	18.62	3.76
" " "	2000	13.36	3.57	17.39	3.81
L.S.D. (5%)		3.14	0.51	3.03	0.25
2004/2005					
	Cont.	21.75	5.47	4.49	4.49
1st Nov. 2004	1000	17.00	4.35	3.60	3.60
" " "	2000	14.36	4.40	3.67	3.67
1st Dec. 2004	1000	18.01	3.65	3.76	3.76
" " "	2000	14.45	4.28	3.81	3.81
L.S.D. (5%)		2.20	0.56	0.25	0.25

Table (2): Effect of CCC treatments on fruits set (%) and number of retained fruits/ main branch at harvest of olive Agazi Shami and Picual cvs. in seasons 2003/ 2004 and 2004/2005.

Cultivar	CCC ppm.	Agazi Shami		Picual	
Character. / Date of sample		Fruit set (%)	No. of Retained fruits at harvest/ main branch	Fruit set (%)	No. of Retained fruits at harvest/ main branch
2003/2004					
	Cont.	5.2b	22c	5.1b	13c
1st Nov. 2003	1000	9.2a	75b	7.5ab	39b
" " "	2000	9.4a	106a	8.0a	57a
1st Dec. 2003	1000	9.7a	92ab	6.9ab	39b
" " "	2000	9.9a	104a	7.2ab	52a
L.S.D. (5%)		1.39	17.86	2.5	7.65
2004/2005					
	Cont.	5.1b	18d	4.5b	13d
1st Nov. 2004	1000	8.4a	79c	6.1a	31b
" " "	2000	9.0a	95b	6.7a	36ab
1st Dec. 2004	1000	8.8a	83bc	5.6a	24c
" " "	2000	9.8a	108a	6.9a	41a
L.S.D. (5%)		2.43	11.49	1.19	7.60

Results showed also that the early CCC application on 1st Nov. was more effective in retarding shoot growth than did the late application on 1st December. Comparing the effect of the two CCC applied concentrations, 1000 and 2000 ppm on shoot growth, the results indicated insignificant difference between the effect of the two concentrations on olive shoot growth, except one treatment, in which CCC was sprayed on 1st December on Agazi Shami. Higher CCC concentration (2000 ppm) in that treatment significantly reduced shoot growth in the ensuing summer more than did at 1000 ppm treatment. The results are in agreement with those of other workers who found that CCC at concentration 2000 ppm applied on Nov. 21st induced the most retardation of spring cycle of shoot growth (Hassaballa et al., 1987; Rath and Rajput, 1990 and Kurian and Iyer, 1993).

Effect of CCC on Number of leaves per shoot:

CCC applications in late autumn decreased the leaves number per shoot in the ensuing growth season in comparison to that of control in the two studied cultivars in the two seasons (Table 1). 2000 ppm of CCC significantly decreased number of leaves per shoot more than did 1000 ppm in Agazi Shami cultivar. Regarding Picual cultivar, the results showed insignificant difference in number of leaves due to CCC-concentration.

The results showed insignificant difference in leaves number/shoot due to CCC application time. It seemed that leaves number per shoot is affected by other factors rather than CCC-application time. The results are in agreement with those of other workers who found that CCC at concentration range 500 – 5000 ppm decreased leaves number per shoot (Hassaballa et al., 1987a; Rath and Rajput, 1990 and Kurian and Iyer, 1993).

Effect of CCC on Leaf area (cm^2):

The data in Table (1) clearly showed that all CCC treatments significantly decreased leaf area in the two studied olive cultivars and in the two studied seasons compared with that of control. The residual effect of CCC might last for 21 d in the plant tissues), thereafter it will be ineffective, (Hifny and Abdel-All., 1977). Therefore we can assume that CCC only affected the leaf primordia in the olive buds, and thus

decreased leaves number/shoot and leaf area when measured in the ensuing season.

The results indicated also that CCC applied on 1st November significantly decreased leaf area more than did the application on 1st December. The results showed no definite trend regarding leaf area in response to CCC- concentrations. Occasionally, leaf area under 2000 ppm CCC was greater than that under 1000 ppm CCC. The present result is confirmed by the pervious work of, Rath and Raipnt (1990), who found that spraying CCC at high concentration (5000 ppm) gave more leaves area than done by lower CCC concentration. Other workers found that Spraying CCC on some fruit species at concentrations ranged from 1000- 5000 ppm decreased leaves area in ensuing summer (Charles et al., 1987).

Effect of CCC on Number of sprouting shoots per main branch:

Data in Fig. (2) clearly showed that CCC sprayed in late autumn significantly increased number of new sprouting shoots per main branch in the ensuing growth season comparing with those of control in the two studied cultivars and in the two seasons. It seemed that the inhibitory action of the sprayed CCC in late autumn had stopped the effect of apical dominance of the main shoots too early in autumn, which led to sprouting lot of buds born in leaf axils on those shoots in the ensuing summer.

CCC at concentration 2000 ppm increased number of the sprouting shoots per main branch more than did the lower concentration (1000 ppm) especially in the second season 2004/2005. The results are in agreement with those of other workers who found that spraying CCC on vegetative growth of different fruit species at concentration ranged from 500 – 5000 ppm caused an increase in number of shoots per branch. (Rath and Rajput, 1990 and Atawia and Azab, 1996).

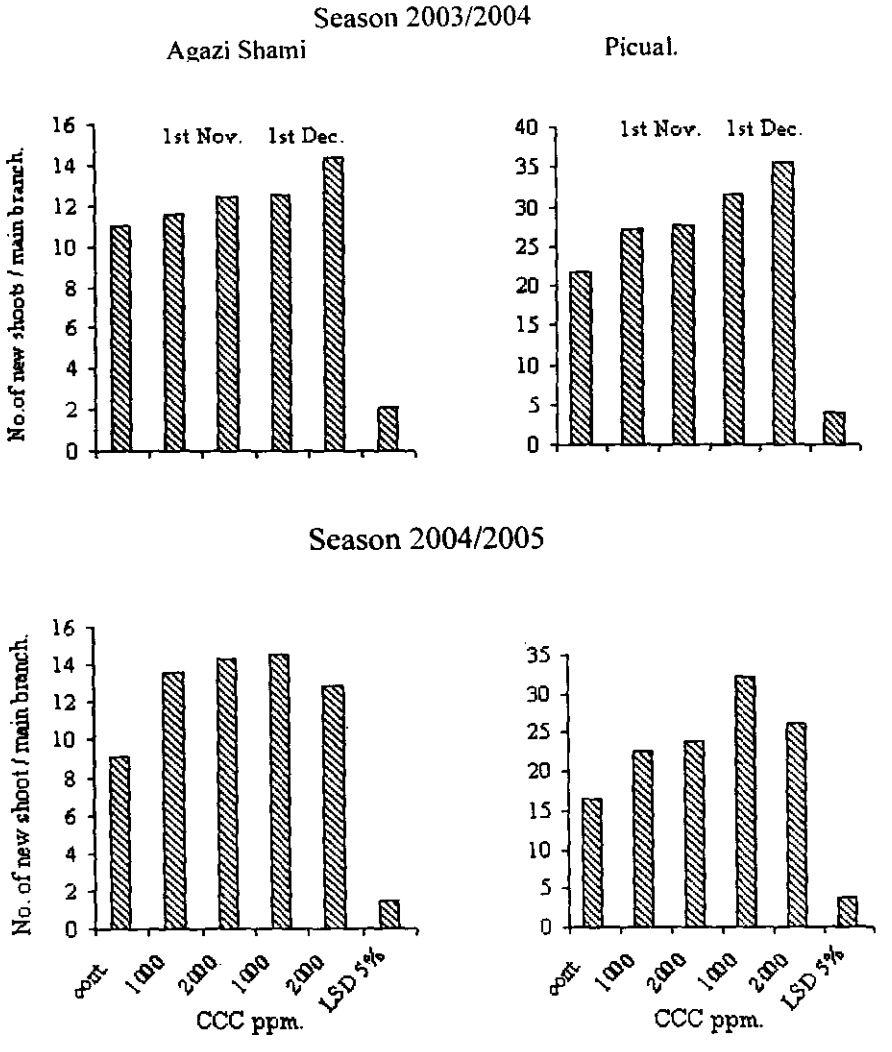

Fig. (2) Effect of CCC treatments on number of new **shoots/ main branch** of Agazi Shami and Picual olive cvs. in seasons 2003 /2004 and 2004/2005.

The effect of CCC on flowering, fruit set and retained fruits at harvest of the two olive cultivars in seasons 2004 and 2005:

The results in fig. (3) showed that CCC significantly increased number of open flowers, number of fruit set per main branch and fruit set percentage in the ensuing season compared with that of control in the two studied cultivars and in the two seasons 2003/2004 and 2004/2005. Higher concentration of CCC (2000 ppm) showed slight increase in number of each open flowers and fruit set than lower one (1000 ppm). The results indicated also that time of CCC spraying either 1st Nov. or 1st Dec. had no effect on CCC action. The positive effect of CCC applied in late autumn on number of flowers/main branch recorded in the ensuing season could be attributed to the influence of CCC in increasing number of floral bud formation. The results are in agreement with those of other workers who found that spraying CCC on some fruit species at concentrations 1000-5000 ppm increased flowers number, fruit set number and number of floral bud formation (Hassaballa et al., 1987b; Rath and Rajput., 1990; Kurian and Iyer., 1993; Ravishankar et al., 1993; Thukral et al., 1993; Mohan and Rao., 1995).

Regarding number of the retained fruits per main branch at harvest, Table (2) showed that CCC application significant increased number and percentage of retained fruits per main branch compared with control in the two studied cultivars and seasons. The present result confirmed the previous work of Brahmachari et al., (1996) who found that spraying Guava trees with CCC before flowering increased the fruit retention as well as number of open flowers and fruit set.

The yield:

The fruit yield per a tree in response to the CCC application:

The results in fig. (5) showed that CCC application significantly increased the fruit yield (kg/tree) in comparison to that of control of the two studied olive cultivars and in the two studied seasons. The increase in yield per a tree can be attributed to the increase in number of fruits retained per a tree at harvest when compared with that of control. The increased number of retained fruit per a tree could be attributed in turn to the significant higher number of produced flower buds than those produced on control plants. The present fact assure that the action of applied CCC caused an increase in floral induction occurrence. The

Table (3): Effect of CCC on fruit physical properties of Olive Agazi Shami and Picual cvs. at harvest in seasons 2003/2004 and 2004/2005.

Cultivar		Agazi Shami						Picual					
Properties	CCC ppm	Fruit volume (cm^3)	Specific gravity (gm/cm^3)	Pulp		Seed		Fruit volume (cm^3)	Specific gravity (gm/cm^3)	Pulp		Seed	
				weight (gm)	(%) fr.wt.	weight (gm)	(%) fr.wt.			weight (gm)	(%) fr.wt.	weight (gm)	(%) fr.wt.
2003/2004													
Date of appl.	Cont.	8.68 bc	0.99	7.43 bcd	87.26	1.08 b	12.74	5.81 bc	0.97	4.69b	82.68	0.97b	17.32b
1st Nov. 2003	1000	7.79 c	0.98	6.72 d	87.69	0.92 c	12.31	4.82 c	0.97	3.85bc	82.40	0.81c	17.60b
" " "	2000	7.25 c	0.94	5.78 d	87.41	0.83 c	12.59	4.46 c	0.91	3.05c	80.44	0.70d	19.55a
1st Dec. 2003	1000	8.25 c	0.88	6.37 d	87.31	0.92 c	12.69	4.70 c	0.97	4.03bc	83.07	0.81c	16.93b
" " "	2000	7.36 c	0.92	5.94 d	87.64	0.84 c	12.66	4.17 c	0.91	3.05c	80.87	0.71d	19.13a
L.S.D. (5%)		1.8	n.s.	1.7	n.s.	0.12	n.s.	1.49	n.s.	1.17	n.s.	0.05	0.97
2004/2005													
Date of appl.	Cont.	8.63 b	0.97	7.22 abc	87.38	1.04 ab	12.62	5.85b	0.97	4.69bc	82.06ab	0.98c	17.94 bc
1st Nov. 2004	1000	7.60 bc	0.99	6.44 cd	87.80	0.87 bc	12.20	4.52 bc	0.94	3.44d	79.26Ab	0.83d	20.74Ab
" " "	2000	6.77 c	0.99	5.95 cd	88.30	0.79 c	11.72	4.83 bc	0.78	2.95cd	79.74 ab	0.73e	20.26 Ab
1st Dec. 2004	1000	8.68 b	0.89	6.9 bcd	88.88	0.86 bc	11.12	4.63 bc	0.98	3.67cd	80.74 ab	0.86d	19.25 Ab
" " "	2000	6.39 c	0.98	5.52 d	87.73	0.56 d	12.27	3.73 c	0.89	2.63d	77.81b	0.72e	22.19 a
L.S.D. (5%)		1.6	n.s.	1.5	n.s.	0.20	n.s.	1.65	n.s.	1.75	6.78	0.05	3.5

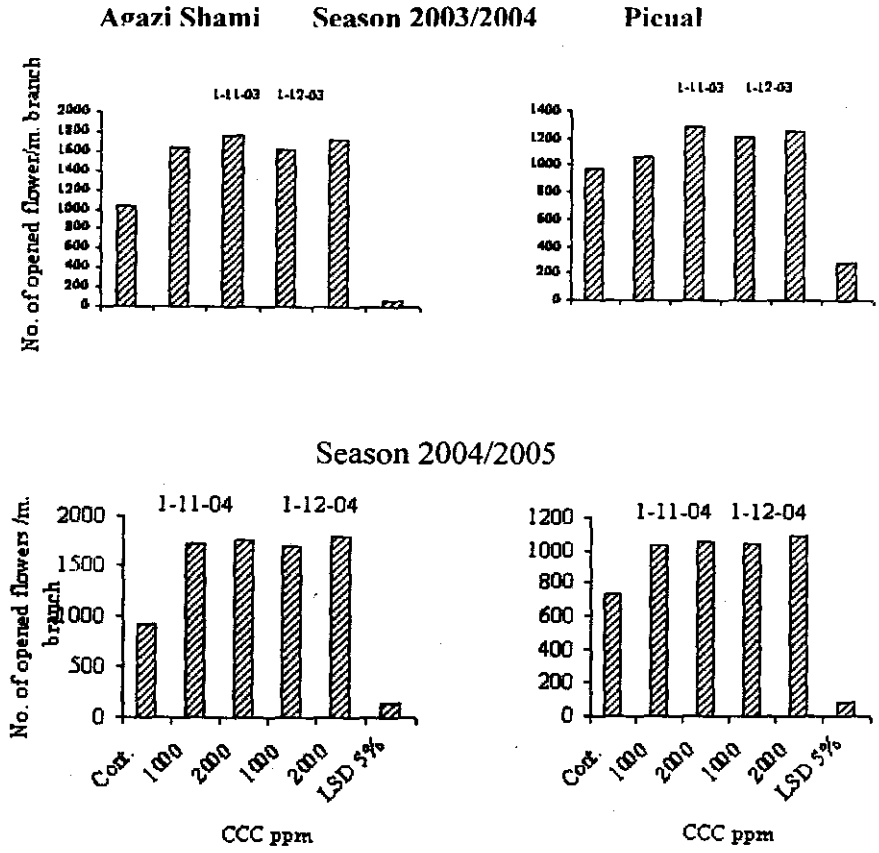

Fig. (3) Effect of CCC on number opened flowers/ main branch of olive Agazi Shami and Picual cvs. in seasons 2003/ 2004 and 2004/2005.

present results are in agreement with those of Khader et al., (1989) who found that aqueous solution of CCC sprayed on mango trees Dashehari cultivar increased the number of fruits per panicle. Thukral et al., (1993) found that spraying CCC on lemon trees, Pant Lemon cultivar decreased fruit drop compared with control.

The results in fig. (5) showed that CCC- application time had insignificant effect on olive yield/tree. On the other hand, CCC at concentration 2000 ppm significantly increased the olive yield/tree more than that obtained with 1000 ppm in both cultivars of olive.

Physical and biochemical fruit characteristics at harvest:

Effect of CCC on the physical fruit properties:

Fig. (6) and Table (3) clearly showed that CCC reduced fruit weight and volume as well as seed weight in comparison to that of control in both seasons. Higher concentration of CCC at 2000 ppm resulted in more decrease in fruit weight and volume than 1000 ppm. The present results are in agreement with that previously obtained by Yetitirme and Biten (1977) who found that spraying CCC at concentrations 1200 and 1600 ppm on olive Ayvalk and Memecik cultivars before the blossom time decreased the fruit size compared with that of control.

The reduction in fruit weight and volume caused by CCC-application could be attributed to the increase in number of fruit set per branch and to the decrease in shoot growth and leaf area. Hassaballa et al., (1987b) working on Balady mandarin trees found that CCC application decreased the fruit weight and volume compared with that of control.

Weight of fruit pulp showed similar trend to that of fruit weight in both cultivars and in the two seasons. However the fruit specific gravity (g/cm^3) and pulp% (fr.wt.) showed no response to CCC application in the two studied cultivars and in the two studied seasons. The present results indicated also that no effect of CCC application time on fruit weight and volume was observed.

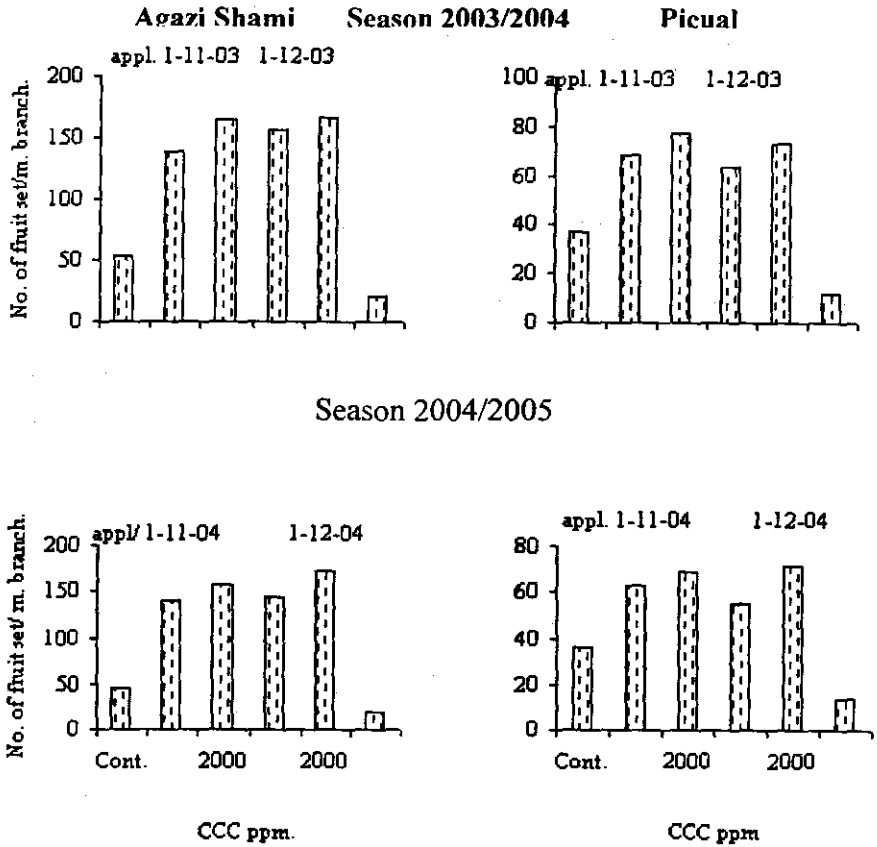

Fig. (4) Effect of CCC on number fruit set/ main branch of olive Agazi Shami and Picual cvs. in seasons 2003/ 2004 and 2004/2005.

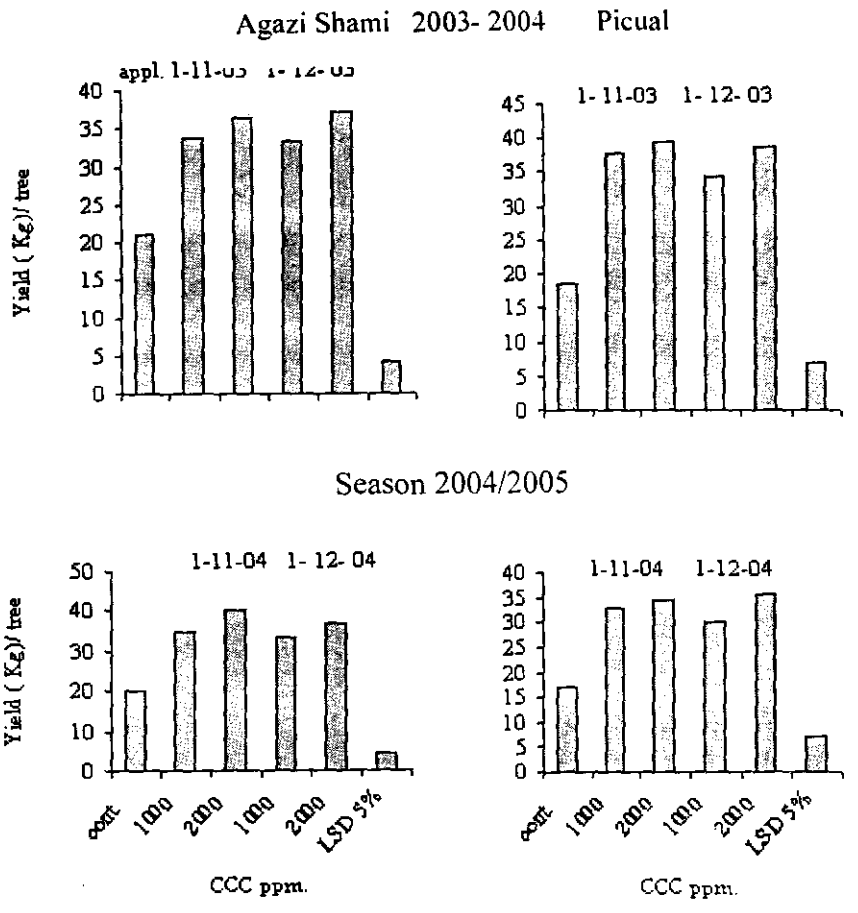

Fig. (5) Effect of CCC on yield (kg) of Olive Agazi Shami and Picual cvs. in seasons 2003 / 2004 and 2004/2005.

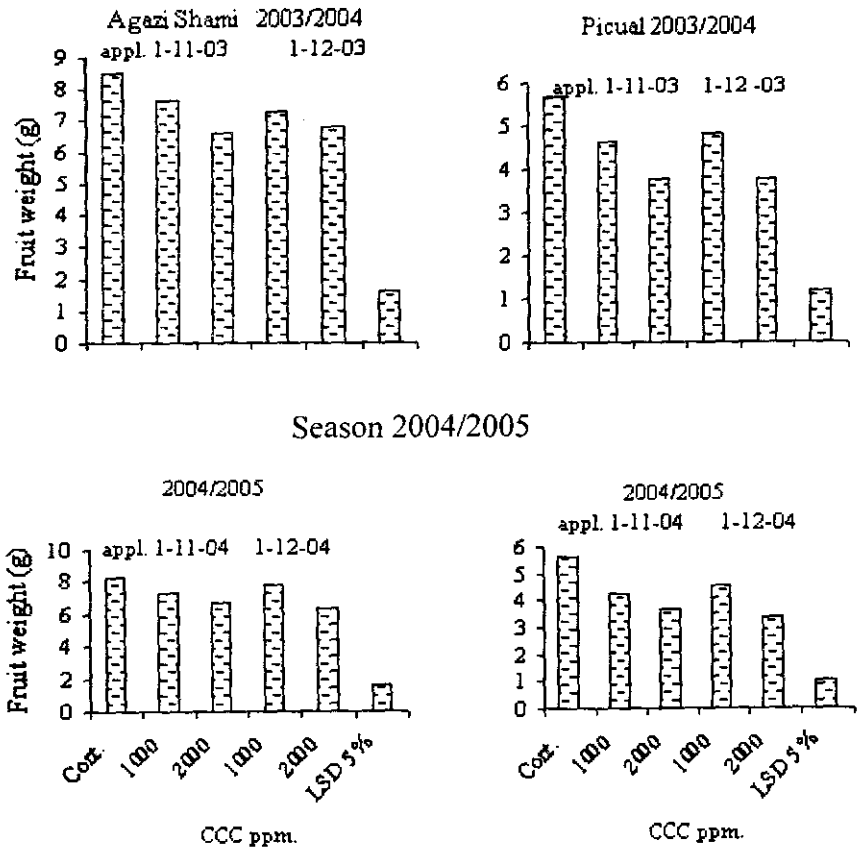

Fig.(6) Effect of CCC on fruit weight (g) of Olive Agazi Shami and Picual cvs. in seasons 2003/2004 and 2004/2005.

Effect of CCC on the biochemical fruit properties:

As can be seen in fig. (7) TSS percentage of the olive fruit juice at harvest and TSS/acid ratio significantly increased in all CCC- treatments in comparison to control in the two studied cultivars and in the two seasons. CCC at higher concentration (2000 ppm) resulted in more increase in TSS % and TSS/acid ratio than at 1000 ppm treatment. However, time of CCC-application, seemed to have no effect on the parameters of biochemical fruit characteristics. The increase in TSS % of fruit at harvest might be due to the intensive photosynthesis in trees previously treated with CCC.

Regarding the total acidity of fruit juice, results in fig. (8) showed apposite trend of that TSS percentage in all CCC- treatments in comparison to control in the two studied cultivars and in the two seasons. The significant decrease in total fruit acidity could be due to the promotion occurred in fruit maturity, whereas the fruit ripened earlier rather than those untreated. According to Brahmachari et al., (1996), the fruit quality of guava was improved after spraying the trees before flowering with CCC at 500 ppm, as the fruit TSS % and TSS/acid ratio were increased, while total fruit acidity was decreased in comparison to those of control.

The results showed that each of the parameters: fruit oil content % (dr.wt.), moisture percentage and total fruit carbohydrates parentage (dr.wt.) showed similar trend to that of TSS percentage of fruit juice in both cultivars. The improvement in fruit quality could be attributed to the effect of CCC in inhibiting the vegetative growth which increased the fruit competitive capability in obtaining more photosynthesis product than the vegetative growth. The results are in agreement with those obtained by Porlingis and Voyiatzis (1986); Boulouho et al., (1990), that Paclobutrazol applications greatly increased olive fruit oil content. Laz (1993) found that spraying Paclobutrazol at concentration 250 ppm on 15th Dec. on Frantoio, Mission and Manzanillo olive cultivars increased fruit oil content in comparison with that of control.

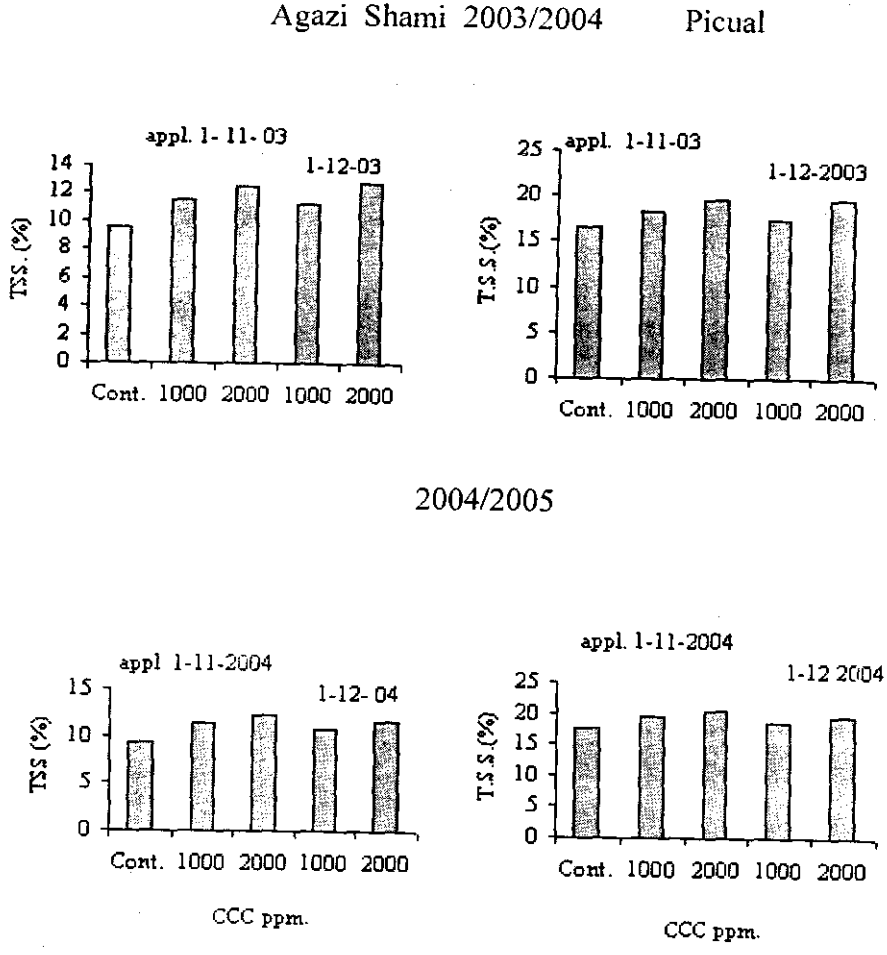

Fig. (7) Effect of CCC on fruit T.S.S.% of olive Agazi Shami and Picual cv. in seasons 2003 / 2004 and 2004/2005.

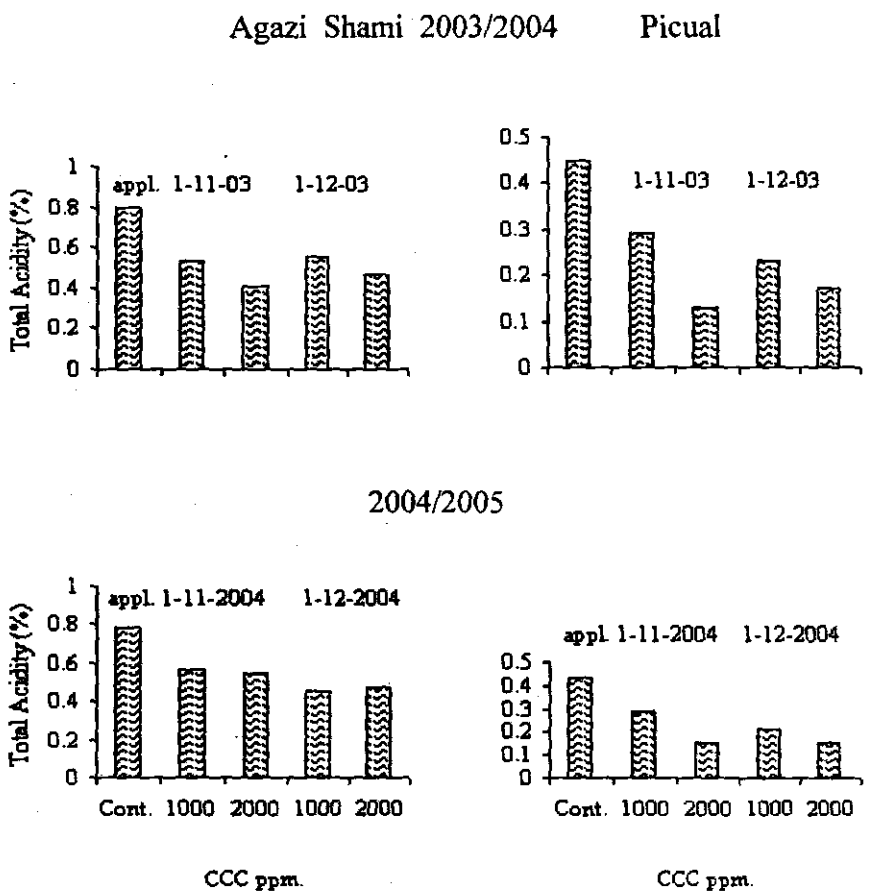

Fig. (8) Effect of CCC on fruit total acidity (%) of olive Agazi Shami and Picual cvs. in seasons 2003 / 2004 and 2004/2005.

Table (4): Effect of CCC on fruit biochemical properties of olive Agazi Shami and Picual cvs. at harvest in seasons 2003 / 2004 and 2004/2005.

Cultivar	Agazi Shami					Picual			
Properties	CCC ppm	T.S.S. /Acid ratio	Oil content % d.wt	Total carbo. % d.wt	Moisture content (%)	T.S.S. /Acid ratio	Oil content % d.wt	Total carbo. % d.wt	Moisture content (%)
2003 / 2004									
Date of appl	Cont.	12.36c	17.52f	10.61f	65.37c	38.02c	53.0e	6.6h	48.13c
1st Nov. 2003	1000	22.55b	19.12ef	14.51e	75.47a	68.47bc	57.75abc	9.44g	56.63b
1st Nov. 2003	2000	32.13a	22.09bc	19.4a	78.13a	101.1ab	59.32a	11.46e	61.66a
1st Dec. 2003	1000	20.9bc	21.67cd	16.5d	75.65a	87.92ab	56.21cd	10.36f	62.08a
1st Dec. 2003	2000	27.45ab	23.88ab	18.5b	76.97a	125.0a	58.7ab	11.64e	64.86a
L.S.D. (5%)		9.10	1.90	0.54	3.55	49.04	2.06	0.34	3.55
2004/2005									
Date of appl	Cont.	12.49c	17.66g	13.61h	64.48c	42.47d	56.01c	8.5i	47.84e
1st Nov. 2004	1000	21.08b	20.01f	16.69g	70.4ab	73.83cd	60.83ab	11.4g	61.46b
1st Nov. 2004	2000	24.01ab	23.54cd	22.45d	71.98a	138.6ab	60.1abc	12.6f	66.55a
1st Dec. 2004	1000	24.8ab	22.45de	21.6e	68.66b	105.5bc	61.68a	10.64h	61.71b
1st Dec. 2004	2000	25.31ab	24.58bc	23.13c	69.0b	143.7ab	63.04a	13.57e	63.0b
L.S.D. (5%)		6.61	1.76	0.42	2.63	42.92	4.53	0.40	2.71

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تأثير السيكوسيل علي تحسين التزهير والمحصول لبعض أصناف الزيتون

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الملخص العربى

أجرى هذا البحث ببستان زيتون يقع على جانب طريق مصر إسماعيلية الصحراوي عند الكيلو ٩٠ كم من القاهرة خلال موسمين متتاليين ٢٠٠٣/ ٢٠٠٤ م ،٢٠٠٤/ ٢٠٠٥ م على صنفين هما العجيزي الشامي للتخليل والبيكوال يستعمل لانتاج الزيت ويهدف البحث إلى زيادة محصول الثمار في العجيزي الشامي والبيكوال بالرش السيكوسيل كمثبط للنمو بتركيزات من صفر أو ١٠٠٠أو ٢٠٠٠ جزء في المليون في موعدين مختلفين الأول أول نوفمبر والثاني أول ديسمبر وقد روعي أن يكون الرش في التاريخ الأول (١ نوفمبر) سابقا لمرحلة التنبيه الزهري التي حددت في بحث سابق لنفس الباحثين وبنفس المزرعة .وتوضح النتائج أن الرش بالسيكوسيل بتركيزيين ١٠٠٠ أو ٢٠٠٠ جزء في المليون أدي إلي نقص معنوي في طول الفرع وعدد الأوراق بالفرع ومساحة الورقة عند إجراء القياس بعد توقف النمو في يوليو . بينما نتج عن رش أشجار الزيتون إلي زيادة معنوية في عدد النموات الحديثة مقارنة بالأشجار الغير معاملة (الكنترول) في كلا صنفين الدراسة وكلا الموسمين. وبصفة عامة نتج عن الرش بالسيكوسيل لأشجار الزيتون زيادة معنوية في عدد الأزهار المتفتحة الكلي بالفرع وعدد ونسبة المنوية للثمار العاقدة وبالمثل ازداد عدد الثمار المتبقية بالفرع عند الحصاد ومحصول الشجرة بالكجم لكلا من الصنفين مقارنة بالأشجار الغير معاملة (الكنترول) . نتج عن الرش بالسيكوسيل نقص في كلا من وزن الثمرة وحجمها ووزن اللب عند الحصاد ولم يكن هناك تأثيرا علي النسبة المنوية للب أو الوزن النوعي للثمرة . علي الجانب الآخر ازدادت النسبة المنوية للمواد الصلبة الذائبة الكلية بالثمرة والنسبة المنوية للزيت (وزن جاف) بينما انخفضت الحموضة الكلية بالثمرة مقارنة بالكنترول.

وهذا يوضح أن الرش بالسيكوسيل أدي الي تحسين جودة الثمار والصفات الطبيعية والكيماوية للثمار بالإضافة إلي زيادة محصول الشجرة مقارنة بالأشجار الغير معاملة.